DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES Office of Structural Materials Quality Assurance and Source Inspection

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Contract #: 04-0120F4

Cty: SF/ALA Rte: 80 PM: 13.2/13.9

File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Siegenthaler, Peter **Report No:** WIR-018780 Address: 333 Burma Road **Date Inspected:** 08-Dec-2010

City: Oakland, CA 94607

OSM Arrival Time: 1900 **Project Name:** SAS Superstructure **OSM Departure Time:** 700 **Prime Contractor:** American Bridge/Fluor Enterprises, a JV

Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China

CWI Name: See Below **CWI Present:** Yes No **Inspected CWI report:** Yes N/A **Rod Oven in Use:** Yes No No N/A Yes N/A **Electrode to specification:** No Weld Procedures Followed: Yes No N/A N/A **Qualified Welders:** Yes No **Verified Joint Fit-up:** Yes No N/A N/A Yes No N/A **Approved Drawings:** Yes No **Approved WPS:** Yes No N/A **Delayed / Cancelled:**

34-0006 **Bridge No: Component:** OBG

Summary of Items Observed: CWI Inspector: Mr. Bao Qian

On this date CALTRANS OSM Quality Assurance (QA) Inspector, Mr. Paul Dawson, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai China, for the purpose of monitoring welding and fabrication.

OBG Bay 14

This QA Inspector observed ZPMC welder Ms. Gao Yuling stencil 217805 used flux cored welding procedure WPS-B-T-2233-ESAB to make OBG segment 13CE floor beam weld FB3166B-001-006. This QA Inspector measured a welding current of approximately 260 amps, 26.0 volts and a welding travel speed of 140 mm per minute. The base materials were preheated with an electric heater and Ms. Gao Yuling appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Chen Chuanzong, stencil 044824 used flux cored welding procedure specification WPS-345-FCAW-1G-ESAB-repair-FCM to make OBG segment 14E buttering weld on the edge of SA3325 – FB3273. This work is being performed to add weld material to increase the width of floor beam FB3273 as directed by critical weld repair B-CWR-2375. This QA Inspector observed a welding current of approximately 310 amps and 27.5 volts and Mr. Chen Chuanzong appeared to be certified to make this weld. This QA Inspector observed that the maximum welding voltage in the WPS is 26.6 volts and that Mr. Chen Chuanzong had a welding voltage that was approximately 1.0 volt above this maximum limit. This QA Inspector showed

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ABF CWI Mr. Bao Qian and welder Mr. Chen Chuanzong the welding voltage meter and they agreed the welding voltage was above the maximum limit. Mr. Chen Chuanzong adjusted the welding voltage to approximately 26.0 volts. This QA Inspector observed that portions of the base material adjacent to where the critical weld repair was being performed had a base material temperature of approximately 100 degrees Celsius. This QA Inspector asked ABF CWI Mr. Bao Qian what was the minimum base material temperature requirement and he indicated the CWR requires a minimum base material temperature of 165 degrees Celsius and the area that was being welded is below the minimum required temperature. Mr. Chen Chuanzong stopped additional welding and ZPMC workers installed electric heaters on the base materials adjacent to the welds. Mr. Bao Qian informed this QA Inspector he is going to issue an incident report to document this temperature was below 165 degrees Celsius. Items observed on this date do not fully appear to comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Ye Bing stencil 066733 used flux cored welding procedure specification WPS-B-T-2233-ESAB to make OBG segment 13AE weld SEG3007AZ-056. ZPMC QC had recorded a welding current of 252 amps and 25.6 volts. This QA Inspector measured a welding current of approximately 205 amps and 25.0 volts. This QA Inspector observed that the minimum welding current listed in the welding procedure specification is 222.8 amps and that Mr. Ye Bing had a welding current that was approximately 17.8 amps below this minimum limit. This QA Inspector showed ABF CWI Mr. Bao Qian the welding procedure specification and he agreed the welding current was too low. Mr. Bao Qian had ZPMC welder Mr. Ye Bing adjust this welding machine to a welding current of approximately 230 amps. Mr. Bao Qian informed this QA Inspector that he had previously measured the welding current and it was acceptable. This QA Inspector observed Mr. Ye Bing appeared to be certified to make this weld. Following adjustment of the welding machine current, items observed on this date appeared to generally comply with applicable contract documents. See the photograph below for additional information.

This QA Inspector observed ZPMC welder Mr. Wang Hai Yang, stencil 068994 used flux cored welding procedure WPS-B-T-2232-ESAB to make OBG segment 13AE weld SA3007AT-069. ZPMC QC had recorded a welding current of 292 amps, 25.3 volts and a welding travel speed of 281mm per minute. Mr. Wang Hai Yang appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC personnel performed heat straightening of segment 14E weld SEG3019*-005. This weld joins deck plate DP3167A to DP3160A. ZPMC has issued heat straightening document HSR #9177 for this activity. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Wang Li, stencil 044772 used shielded metal arc welding procedure specification WPS-B-P-2211-B-U2-FCM-1 to complete tack welds between OBG segment 13BW vertical plates VP3007A and VP3008A groove weld VP3011U-001. This QA Inspector observed a welding current of approximately 150 amps, a torch was used to preheat the base materials and Mr. Wang Li appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Ms. Gao Yuling stencil 217805 used flux cored welding procedure WPS-B-T-2233-ESAB to complete the root pass between OBG segment 13BW vertical plates VP3007A and VP3008A groove weld VP3011U-001. This QA Inspector measured a welding current of approximately 270 amps,

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26.0 volts and a welding travel speed of 260 mm per minute. The base materials were preheated with an electric heater and Ms. Gao Yuling appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Ms. Wang Min, stencil 044771 used submerged arc welding procedure specification WPS-B-T-2221-B-L2C-S-2 to complete the OBG segment 13BW vertical plates VP3007A and VP3008A groove weld VP3011U-001. This QA Inspector observed a welding current of approximately 650 amps, 32.0 volts, a welding travel speed of 500mm per minute and Ms. Wang Min appeared to be certified to make this weld. This QA Inspector observed the base materials had been preheated with electric heaters prior to welding. Items observed on this date appeared to generally comply with applicable contract documents. See the photograph below for additional information.

Quality Assurance Inspectors Mr. Dennis Combs and Mr. Kelly Leavitt observed ZPMC workers have removed multiple CJP and fillet weld joints to correct misalignment of Steel Barriers E5-SB13-066 and E5-SB13-072 inside Bay 28. ZPMC did not appear to have notified Caltrans Engineers of the intent to remove these welds. On December 9, 2010 at around 0200 hours Mr. Kelly Leavitt observed ZPMC workers appeared to be welding inside bay 28 and ZPMC workers had closed and locked all of bay 28 access doors preventing QA Inspectors from accessing the interior of bay 28. This QA Inspector asked ABF CWI Mr. Bao Qian, who was monitoring welding in bay 14 if he could speak with the workers in bay 28 and ask them to allow Caltrans QA Inspectors to enter inside of bay 28. Mr. Bao Qian came to bay 28 and after several minutes of discussion the workers opened a side door. Mr. Kelly Leavitt and this QA Inspector observed the several welds are warm and that ZPMC welder Mr. Hu Yongchang, stencil 203805 appears to have completed weld repairs of several of the welds that had been removed earlier this shift. No ZPMC QC/CWI Inspectors were observed in bay 28. This QA Inspector informed Mr. Bao Qian that this QA Inspector will issue an incident report to document the unauthorized weld removals, welding of the removed welds without a CWI being present and lack of access to bay 28.





Summary of Conversations:

See Above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact James Devey +8615000026784, who represents the Office of Structural Materials for your project.

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Inspected By: Quality Assurance Inspector Dawson,Paul **Reviewed By:** Carreon, Albert QA Reviewer